

## RAPID PROGRESSION OF CARCINOMA OF THE PENIS AFTER LASER TREATMENT

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We report a case of rapid progression of carcinoma of the penis, in a 90-year-old man, one year after yttrium-aluminum-garnet (YAG) laser therapy. This patient had received YAG laser ablation for well-differentiated, verrucous, squamous cell carcinoma of the penis at the age of 89, and was found on physical examination to have local recurrence. The recurrent tumors were surgically resected, and the histological examination revealed infiltrating, poorly-differentiated squamous cell carcinoma. The patient developed metastases of bilateral inguinal lymph nodes and liver and died of penile carcinoma. We should be aware of the possibility of an unfavorable outcome following the use of laser therapy against carcinoma of the penis.

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**Key words** : Penile carcinoma, Lasers, Recurrence

### INTRODUCTION

The traditional and standard treatment for localized, squamous cell carcinoma of the penis is partial or radical penectomy, with or without adjuvant radiotherapy and/or chemotherapy. Recently, several studies have demonstrated that for superficial, low to moderate grades of penile carcinoma, laser treatment produces excellent cosmetic results as well as low recurrence rates<sup>1-4,7)</sup> Nevertheless, there have been reports of rapid disease progression after this laser treatment<sup>8)</sup> Here, we report such a case of localized carcinoma of the penis, for which there was a rapid recurrence with pathological progression following laser treatment.

### CASE REPORT

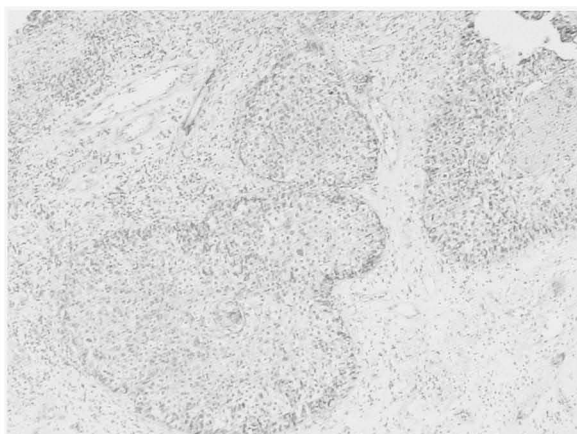
An 89-year old man with true phimosis presented with a bloody discharge from the penis. He underwent circumcision, which revealed small verrucous tumors scattered over an area approximately 15×5 mm on the glans penis. A biopsy of the tumor revealed well-differentiated, squamous cell carcinoma (Fig. 1). Computerized tomographic scan of the chest, abdomen and pelvis showed no evidence of metastasis; a diagnosis was made of penile carcinoma, stage TaN0M0.

The patient and his family were offered the traditional surgical approach of a partial penectomy, but this was declined. Instead, he received conservative laser treatment (Neodymium : yttrium-aluminum-garnet Nd : YAG) under local anesthesia; the range of laser ablation was approximately 50 × 40 mm. The patient was followed-up monthly and had been disease-free for 11 months. However, one year after the laser treatment, physical examination revealed papillary lesions at the base of the glans, approximately 10×5 mm, which were where the laser ablation had been given. The patient underwent a local excision and the pathological



**Fig. 1.** Microscopic finding of the primary well differentiated tumor.

examination revealed poorly differentiated, invasive, squamous cell carcinoma (Fig. 2). At the time of the diagnosis of this local recurrence, computerized tomographic scan of the abdomen and pelvis revealed bilateral inguinal lymph nodes and liver metastases



**Fig. 2.** Microscopic appearance of the recurrent poorly differentiated, invasive tumor.

(T1N2M1). However, because of his advanced age, the patient did not receive adjuvant chemotherapy. He died of penile cancer 27 months after the laser treatment.

### DISCUSSION

Laser treatment has been reported as being well-suited as a therapy for localized (2 cm or less), superficial ( $T_{is}$ ,  $T_a$  and  $T_1$ ), low to moderate grades of the squamous cell carcinoma of the penis<sup>1-4</sup>). Malloy et al. reported that, following laser treatment of penile cancer, 5 patients with Stage  $T_{is}$  had no evidence of disease recurrence for an average of 26.2 months, while 6 out of 9 (67%) patients with  $T_1N_0M_0$  were tumor-free after an average of 22 months<sup>1</sup>). Windahl and Hellsten reported that 19 patients treated with combined carbon dioxide and neodymium: YAG lasers were disease-free for a mean period of 31 months and concluded that laser therapy was an excellent organ-sparing treatment for superficial, grade 1 to 2 penile squamous cell carcinoma<sup>2</sup>). Bezooijen et al. reported that 5 out of 19 patients with carcinoma *in situ* of the penis showed a recurrence of their carcinoma *in situ* at an average follow-up time of 25 months after laser therapy, but that this laser therapy was also well-suited for treating the recurrence, without the need for more mutilating surgical treatment<sup>3</sup>). In addition, laser therapy has been reported to be useful in combination with radiation and chemotherapy for primary penile tumor, as well as regional lymph node metastasis<sup>4</sup>).

Human papilloma virus (HPV) plays a critical role in the development of penile squamous cell carcinoma<sup>5,6</sup>). Tietjen and Malek have described how virally-infected, precancerous lesions are non-visible and lie scattered around the circumference of visible malignant lesions<sup>7</sup>). They have also reported that processing the skin with 5% acetic acid clearly demonstrates the presence of any precancerous non-visible lesions near the more clinically-obvious lesions, but at varying degrees. By using aggressive laser therapy directed not only at the visible lesions but also at the entire dysplastic premalignant lesion, they were able to demonstrate excellent cosmetic as well as clinical results<sup>7</sup>).

On the other hand, Tsukamoto et al. reported a case of carcinoma *in situ* of the penis, which rapidly progressed into invasive carcinoma with inguinal lymph node metastases only 6 months after laser therapy<sup>8</sup>). They suspected that this disease recurrence and the development of distant metastases were due to the insufficient range of the laser ablation.

In this case, the primary tumor was a low staged, well-differentiated carcinoma. However, the recurrent tumor after YAG laser treatment progressed to an invasive, poorly differentiated carcinoma. Furthermore, the recurrent tumor was located at the region where the YAG laser ablation had been given. This indicates that the range of laser ablation was not insufficient and there appears to be a limitation to the application of laser treatment alone for penile carcinoma.

In conclusion, despite low stage ( $T_a$ ), low grade (well differentiated), and small tumor area (<2 cm), the progression and metastases had occurred rapidly after laser ablation in this case. Therefore, laser treatment is not enough for controlling even localized low-grade, low stage penile carcinoma.

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## 和文抄録

## レーザー治療1年後に再発，急速に進展した陰茎癌の1例

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90歳，男性．89歳時，陰茎癌（表在性高分化扁平上皮癌，pTaN0M0）の診断にて，レーザー治療を施行．1年後，局所再発を認めたため，局所の切除手術を施行，病理診断は浸潤性低分化扁平上皮癌であった．その後，肝転移のため癌死した．陰茎癌に対するレー

ザー治療は有効とする報告も多いが，治療後急速に進行する症例もあるため，治療後の経過観察は重要である．

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